

04-24-00

A.

Practitioner's Docket No.

460-009386-US(PAR)

PATENT

## Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.' " M.P.E.P. § 601, 7th ed.

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application

Assistant Commissioner for Patents

Washington, D.C. 20231

## NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): Janne HYOTYLAINEN

WARNING: 37 C.F.R. § 1.41(a)(1) points out:

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors."

For (title): WIRELESS COMMUNICATION DEVICE

## CERTIFICATION UNDER 37 C.F.R. § 1.10\*

(Express Mail label number is mandatory.)

(Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date April 21, 2000, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL336862990US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Debra G. Conrad

(type or print name of person mailing paper)



Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

\*WARNING: Each paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(New Application Transmittal [4-1]—page 1 of 11)

jc808 U.S. PRO  
04/21/00

jc883 U.S. PRO  
09/553663  
04/21/00

0953663 042400

## 1. Type of Application

This new application is for a(n)

(check one applicable item below)

- ☒ Original (nonprovisional)  
☐ Design  
☐ Plant

**WARNING:** Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. § 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.

**WARNING:** Do not use this transmittal for the filing of a provisional application.

**NOTE:** If one of the following 3 items apply, then complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED** and a **NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION**.

- ☐ Divisional.  
☐ Continuation.  
☐ Continuation-in-part (C-I-P).

## 2. Benefit of Prior U.S. Application(s) (35 U.S.C. §§ 119(e), 120, or 121)

**NOTE:** A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. § 112. Each prior application must also be:

(i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or

(ii) Complete as set forth in § 1.51(b); or

(iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or

(iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(f) within the time period set forth in § 1.53(f).

37 C.F.R. § 1.78(a)(1).

**NOTE:** If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED**.

**WARNING:** If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.

**WARNING:** When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application must be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

- ☐ The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

### 3. Papers Enclosed

- A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

11 Pages of specification

3 Pages of claims

5 Sheets of drawing

**WARNING:** DO NOT submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 C.F.R. § 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).

**NOTE:** "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. § 1.84(c).

(complete the following, if applicable)

- ☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. § 1.84(b).

☐ formal

☐ informal

### B. Other Papers Enclosed

       Pages of declaration and power of attorney

1 Pages of abstract

       Other

### 4. Additional papers enclosed

- ☐ Amendment to claims

☐ Cancel in this applications claims \_\_\_\_\_ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

☐ Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)

☒ Preliminary Amendment

☒ Information Disclosure Statement (37 C.F.R. § 1.98)

☒ Form PTO-1449 (PTO/SB/08A and 08B)

☒ Citations

- ☐ Declaration of Biological Deposit
- ☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.
- ☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative
- ☐ Special Comments
- ☐ Other

**5. Declaration or oath (including power of attorney)**

*NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)-(3).*

*NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)-(4).*

- ☐ Enclosed  
Executed by

(check all applicable boxes)

- ☐ inventor(s).
- ☐ legal representative of inventor(s).  
37 C.F.R. §§ 1.42 or 1.43.
- ☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.
  - ☐ This is the petition required by 37 C.F.R. § 1.47 and the statement required by 37 C.F.R. § 1.47 is also attached. See item 13 below for fee.

- ☒ Not Enclosed.

*NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.*

- ☒ Application is made by a person authorized under 37 C.F.R. § 1.41(c) on behalf of all the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 C.F.R. § 1.16(e) can be filed subsequently).

- ☐ Showing that the filing is authorized.  
(not required unless called into question. 37 C.F.R. § 1.41(d))

## 6. Inventorship Statement

**WARNING:** If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

☐ The same.

or

☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,

☐ is submitted.

☐ will be submitted.

## 7. Language

**NOTE:** An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of \$130.00 required by 37 C.F.R. § 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 C.F.R. § 1.52(d).

☒ English

☐ Non-English

☐ The attached translation includes a statement that the translation is accurate. 37 C.F.R. § 1.52(d).

## 8. Assignment

☒ An assignment of the invention to Nokia Mobile Phones Ltd.

☐ is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

☒ will follow.

**NOTE:** "If an assignment is submitted with a new application, send two separate letters—one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

**WARNING:** A newly executed "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

(New Application Transmittal [4-1]—page 5 of 11)

**9. Certified Copy**

Certified copy(ies) of application(s)

Country	Appln. No.	Filed
Finland	990890	21 April 1999
Country	Appln. No.	Filed
Country	Appln. No.	Filed

from which priority is claimed

☒ Is (are) attached.☐ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 C.F.R. § 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. § 120 is itself entitled to priority from a prior foreign application, then complete Item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

**10. Fee Calculation (37 C.F.R. § 1.16)**A. ☒ Regular application

CLAIMS AS FILED						
Number filed			Number Extra		Rate	Basic Fee 37 C.F.R. § 1.16(a) \$ 690.00
Total						
Claims (37 C.F.R. § 1.16(c))	16	- 20 =	0	×	\$ 18.00	0
Independent						
Claims (37 C.F.R. § 1.16(b))	1	- 3 =	0	×	\$ 78.00	0
Multiple dependent claim(s), if any (37 C.F.R. § 1.16(d))				+	\$260.00	

☐ Amendment cancelling extra claims is enclosed.☒ Amendment deleting multiple-dependencies is enclosed.☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 C.F.R. § 1.16(d).

Filing Fee Calculation

\$ 690.00

B. ☐ Design application

(\$310.00—37 C.F.R. § 1.16(f))

Filing Fee Calculation

\$

C. ☐ Plant application

(\$480.00—37 C.F.R. § 1.16(g))

Filing fee calculation

\$

**11. Small Entity Statement(s)**

- ☐ Statement(s) that this is a filing by a small entity under 37 C.F.R. § 1.9 and 1.27 is (are) attached.

**WARNING:** "Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. § 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent or includes a copy of the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).

**WARNING:** "Small entity status must not be established when the person or persons signing the . . . statement can *unequivocally* make the required self-certification." M.P.E.P., § 509.03, 6th ed., rev. 2, July 1996 (emphasis added).

(complete the following, if applicable)

- ☐ Status as a small entity was claimed in prior application  
\_\_\_\_\_ / \_\_\_\_\_, filed on \_\_\_\_\_, from which benefit  
is being claimed for this application under:

35 U.S.C. § ☐ 119(e),  
☐ 120,  
☐ 121,  
☐ 365(c),

and which status as a small entity is still proper and desired.

- ☐ A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of A, B or C above)

\$\_\_\_\_\_

**NOTE:** Any excess of the full fee paid will be refunded if small entity status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 C.F.R. § 1.28(a).

**12. Request for International-Type Search (37 C.F.R. § 1.104(d))**

(complete, if applicable)

- ☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

**13. Fee Payment Being Made at This Time**

☐ Not Enclosed

☐ No filing fee is to be paid at this time.

*(This and the surcharge required by 37 C.F.R. § 1.16(e) can be paid subsequently.)*

☒ Enclosed

☒ Filing fee \$ 690.00

☐ Recording assignment  
(\$40.00; 37 C.F.R. § 1.21(h))  
(See attached "COVER SHEET FOR  
ASSIGNMENT ACCOMPANYING NEW  
APPLICATION".) \$ \_\_\_\_\_

☐ Petition fee for filing by other than all the  
inventors or person on behalf of the inventor  
where inventor refused to sign or cannot be  
reached  
(\$130.00; 37 C.F.R. §§ 1.47 and 1.17(i)) \$ \_\_\_\_\_

☐ For processing an application with a  
specification in  
a non-English language  
(\$130.00; 37 C.F.R. §§ 1.52(d) and 1.17(k)) \$ \_\_\_\_\_

☐ Processing and retention fee  
(\$130.00; 37 C.F.R. §§ 1.53(d) and 1.21(l)) \$ \_\_\_\_\_

☐ Fee for international-type search report  
(\$40.00; 37 C.F.R. § 1.21(e)) \$ \_\_\_\_\_

NOTE: 37 C.F.R. § 1.21(f) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 C.F.R. § 1.53(f) and this, as well as the changes to 37 C.F.R. §§ 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(f) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed \$ 690.00

**14. Method of Payment of Fees**

☒ Check in the amount of \$ 690.00

☐ Charge Account No. \_\_\_\_\_ in the amount of  
\$ \_\_\_\_\_

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).



## 15. Authorization to Charge Additional Fees

**WARNING:** If no fees are to be paid on filing, the following items should not be completed.

**WARNING:** Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

- ☒ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 16-1350:

☒ 37 C.F.R. § 1.16(a), (f) or (g) (filing fees)

☒ 37 C.F.R. § 1.16(b), (c) and (d) (presentation of extra claims)

**NOTE:** Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

☒ 37 C.F.R. § 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)

☒ 37 C.F.R. § 1.17(a)(1)-(5) (extension fees pursuant to § 1.136(a)).

☐ 37 C.F.R. § 1.17 (application processing fees)

**NOTE:** "... A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

☐ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

**NOTE:** Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

**NOTE:** 37 C.F.R. § 1.28(b) requires "Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . . ." From the wording of 37 C.F.R. § 1.28(b), (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

**16. Instructions as to Overpayment**

*NOTE: "... Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).*

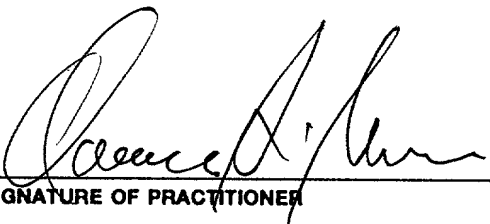
- ☒ Credit Account No. 16-1350  
☐ Refund

**SEND ALL CORRESPONDENCE TO:**

Reg. No. 24,622

Tel. No. (203) 259-1800

Customer No.

  
SIGNATURE OF PRACTITIONER

Clarence A. Green

(type or print name of attorney)

PERMAN & GREEN, LLP

P.O. Address

425 Post Road, Fairfield, Connecticut 06430

☐ **Incorporation by reference of added pages**

*(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)*

- ☐ Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added \_\_\_\_\_

- ☐ Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added \_\_\_\_\_

- ☐ Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.

Number of pages added \_\_\_\_\_

- ☐ Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added \_\_\_\_\_

☒ **Statement Where No Further Pages Added**

*(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)*

- ☒ This transmittal ends with this page.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Express Mail No.: EL336862990US

In re Application of: Janne HYOTYLAINEN

SERIAL NUMBER:

EXAMINER:

FILING DATE: Herewith

ART UNIT:

TITLE: WIRELESS COMMUNICATION DEVICE

ATTORNEY DOCKET NO.: 460-009386-US(PAR)

The Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**PRELIMINARY AMENDMENT**

Dear Sir:

Please amend the above-identified, enclosed patent application as follows:

**IN THE CLAIMS:**

Please amend Claims 3, 4, 5, 6, 7, 8, 10, 11, 12, 13 and 14 as shown below.

Claim 3, line 1, delete "or 2".

Claim 4, line 1, delete "2 or 3,".

Claim 5, lines 1 and 2, delete "2, 3 or 4,".

Claim 6, lines 1 and 2, delete "any of claims 1 to 5" and insert --claim 1--.

Claim 7, lines 1 and 2, delete "any of claims 1 to 6" and insert --claim 1--.

Claim 8, lines 1 and 2, delete "any of claims 1 to 8" and insert --claim 1--.

Claim 10, line 1, delete "or 9".

Claim 11, lines 1 and 2, delete "any of claims 1 to 10" and insert --claim 1--.

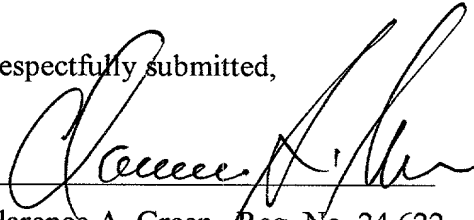
Claim 13, lines 1 and 2, delete "or 12".

Claim 14, lines 1 and 2, delete "any of claims 1 to 13" and insert --claim 1--.

REMARKS

Please enter this preliminary amendment prior to calculation of the fees.

Respectfully submitted,



Clarence A. Green, Reg. No. 24,622  
Perman & Green, LLP  
425 Post Road  
Fairfield, CT 06430 (203) 259-1800

21 April 2000

Date

## Wireless communication device

5 The present invention relates to a wireless communication device comprising at least a display means for presenting information, said display means having at least a first edge and a second edge, wherein information is arranged to be displayed between said first and second edges of the display means, and said first edge is situated above displayed information and said second edge is situated below displayed  
10 information when information is displayed on said display means in a position natural to a user of the wireless communication device, means for performing key functions having at least means for selecting a phone number, a housing comprising at least a first end, a second end, and a front panel located between the first end and the second end,  
15 and a cover part arranged to be movable between a first limit position and a second limit position, in which first limit position said means for performing key functions are at least partly covered by the cover part, and in which second limit position at least part of said first means for performing key functions are not covered by the cover part.

20 Wireless communication devices, such as GSM mobile phones, have a user interface (UI) for operating the wireless communication device. The user interface comprises typically a keypad, a display means, an electroacoustic transducer such as an earpiece, and an acoustoelectric  
25 transducer such as a microphone. By means of the keypad, the user of the wireless communication device can e.g. select a telephone number, answer an incoming call, write text messages, modify the settings of the wireless communication device, etc. On the display means, it is possible to display various information to the user of the wireless communication device, e.g. to inform the telephone number of an incoming call,  
30 display a response to key presses made by the user, display information on the settings of the wireless communication device, display text messages, etc. The display means can also be used to display telephone directory information and other user-specific  
35 information possibly stored in a memory means, such as the SIM card (Subscriber Identity Module), of the wireless communication device.

Next, the terms to be used in this specification to describe the different parts in the housing of the wireless communication device are defined. The housing of the wireless communication device, or the housing of the handset in such wireless communication devices with a separate handset, is preferably an elongated hexahedron having in the longitudinal direction a cross-sectional form at least partly resembling a rectangle. Thus, according to the use situation, one wall of the housing can be called a front panel and the wall opposite to it a rear panel. Correspondingly, preferably the longitudinal walls can be called the first and second side walls and the ends the first and second end.

In the early stages of development of wireless communication devices, they were intended for use particularly in vehicles. In these so-called car phones, the user interface was either in a separate handset or it was located under the front panel of the housing of the car phone. The vehicles were equipped with a holder for placing the car phone interface in a detachable manner e.g. close to the dash board. Thus, the keypad could be used without removing the interface from the holder. The display means was placed so that it was above the keypad in a situation when the interface was in this holder. Thanks to this arrangement, when the user was for example entering a telephone number the hand did not cover the display means but it was visible to the user.

Also in wireless communication devices that were developed later, the display means and the keypad were placed in the above-described way. Upon using a wireless communication device, it is usually held in either of the hands so that the keypad is closer to the wrist of this hand than the display means. Moreover, the wireless communication device is usually held in a substantially upright position, wherein the display means is slightly higher than the keypad.

In display means used in wireless communication devices, there is preferably a substantially rectangular display field whose edges are called, in a way known as such, by the terms upper, lower, left and right edge. Thus, the display means is imagined in a position in which the characters and possible graphical figures to be displayed to the user are shown in a position and orientation natural to the user enabling

them to be read and interpreted in a manner conventional to the user. In spite of this, in practical situations the display means may be in a position in which the upper edge of the display field is lower than the lower edge, but there is still no risk of confusing the terms defining said display field. It is obvious that said characters can vary in different countries and in different language versions of the wireless communication device. For example, Arabic numbers and the Roman character set are generally used in Europe, but the character set used e.g. in China and Japan may also be different. Moreover, the order of presenting information is not the same in all countries than in most of Europe, i.e. from left to right and from the top downwards. In some countries, the order of presenting information is from the right to the left and from the top downwards. Yet another order of presentation used is from the top downwards and from right to left. However, it is common to all these orders of presentation that the display field of the display means can be kept in the same position and that it is possible to use the above-mentioned edge terms defining the display field in an unequivocal way.

Expressed with the above-presented terms of edges of the display field, the user interface of the wireless communication device of prior art is formed in a way that the display means is close to the second end of the housing so that the upper edge of the display field is closer to this second end than the lower edge of the display field. Correspondingly, the keypad is close to the first end of the housing of the wireless communication device when the wireless communication device is in the use position. The appended Fig 1 shows one such wireless communication device in a perspective view.

The wireless communication device can be used with two hands so that the wireless communication device is held in one hand and the fingers of the other hand can be used to press the keys. The wireless communication device can also be placed e.g. on a table, wherein one hand is used for supporting the wireless communication device in the lateral direction, if necessary, and fingers of the other hand are used to press the keys. However, there is often a need to use the wireless communication device when walking, in a car, or in another situation, in which it is not possible to operate with two hands and there is no table



or corresponding support available. Thus, the aim is to operate the wireless communication device with one hand. In wireless communication devices of prior art, this is difficult, because the fingers of the hand holding the wireless communication device should also be used for operating the keypad for performing desired operations, such as selecting a telephone number. When the wireless communication device is held in a hand, the keypad is located at that end of the housing of the wireless communication device which is close to the wrist of the user, that is, expressed with the terms used in this specification, at the first end, and the fingers are closer to the second end of the housing. The fingers should thus be bent to reach the keypad. This is difficult and requires an unnecessary effort and concentration on the operation of pressing the keys. Moreover, for making it possible to press the keys with one hand, the wireless communication device must be supported with the fingers, relatively far from the wrist, wherein the grip by the fingers on the wireless communication device is unstable.

In the development of wireless communication devices, one aim is to reduce the size of the wireless communication device. Upon reduction of the size of the wireless communication device, the size of the keypad may also be reduced, wherein operation with one hand becomes more difficult. This also increases the risk of incorrect pressing of keys, because a finger may, upon pressing a key, hit the adjacent key and cause it to be pressed down. Furthermore, the keypad and the display means are close to each other, wherein when keys are pressed down, part of the display field may be covered by the hand, preventing the user from seeing all the information displayed on the display field.

Some wireless communication devices according to prior art are provided with a hinged flap attached to the main body of the wireless communication device that is pivoted in such a way that it overlaps the main body when stowed but extends the overall length of the wireless communication device when in use. This hinged flap is positioned on top of at least part of the keypad when the wireless communication device is not in the normal use position. In a use situation the cover part is pivoted away from the main body of the wireless communication device wherein the keypad becomes available for use. In some wireless communication devices the hinged flap is equipped with a microphone

which is thus placed close to the user's mouth in a call situation. However, turning this hinged flap into the open position and back to the closed position is very difficult, if one must use the wireless communication device with one hand.

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Wireless communication devices in which the housing is provided with a cover part, which is slidable or turnable in another way are also known. The purpose of this cover part is to protect the keypad and to prevent erroneous key presses when the wireless communication device is not in the use position. In the use position, e.g. during a call or while writing text messages, the cover part is moved away from over the keypad e.g. by sliding, wherein the keypad can be used. In such a wireless communication device, the microphone is placed preferably in the cover part. Also in such a communication device, it may be difficult to slide the cover part when operating the device with one hand.

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Finnish utility model FI-U2229 describes a wireless mobile phone, which has keypad and display means reversed, i.e. the display means is below the keypad when the phone is in its normal use position. The figure of the utility model illustrates that the keys which are used for selecting a phone number, e.g. numeric keys, are situated in the middle of the housing of the wireless mobile phone, while other keys, e.g. an answering key, hang up key, menu key and arrow keys, are situated near the top edge of the housing of the wireless mobile phone. It is still not easy to use a wireless mobile phone implemented according to such a design, e.g. to select a number with one hand, although the keypad is somewhat nearer the top edge of the housing of the wireless mobile phone than in other wireless mobile phones of prior art. Furthermore, this kind of arrangement of the keys is not optimal for wireless mobile phones having a movable cover part, which allows the user to press at least some of the control keys independent of the position of the cover part.

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It is an aim of the present invention to present a wireless communication device, in which the drawbacks presented above are reduced to a significant extent. The wireless communication device according to the present invention is characterized in that said first edge of the display means is nearer the second end of the housing than

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said second edge of the display means, and that said means for selecting a phone number are placed in the housing of the wireless communication device so that they are nearer the second end of the housing than the first end of the housing.

5

With the present invention, significant advantages are achieved compared with wireless communication devices of prior art. The wireless communication device according to the invention can be made in a relatively small size, and the usability of the user interface can still  
10 be made to correspond to or exceed that of larger wireless communication devices. In the wireless communication device according to the invention, the location of the keypad and the display means is more advantageous in view of operating with one hand than in wireless communication devices of prior art. Thus, it is easier for the  
15 user e.g. to select a telephone number than in wireless communication devices of prior art, particularly in situations in which the use of the wireless communication device with two hands is difficult or is not possible. Furthermore, with the better location of the keyboard, the probability of incorrect key pressings is reduced.

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In the following, the present invention will be described in more detail with reference to the appended drawings, in which

Fig. 1 shows a wireless communication device of prior art in a perspective view,  
25

Fig. 2 is a schematic representation of a wireless communication device,

30 Fig. 3 shows a wireless communication device according to a preferred embodiment of the invention in a perspective view,

Fig. 4a shows another wireless communication device according to an advantageous embodiment of the invention placed in a standby position, seen from the front,  
35

Fig. 4b shows another wireless communication device according to an advantageous embodiment of the invention placed in a use position, seen from the front, and

5 Fig. 5 shows another wireless communication device according to an advantageous embodiment of the invention comprising a touch screen, seen from the front.

10 In the following, the invention will be described in more detail with the example of a wireless communication device 1 shown e.g. in Figs. 2 and 3. The wireless communication device 1 comprises a user interface placed in connection with the front panel 6a in its housing 6, provided with e.g. a display means 2, a keypad 3, an earpiece 4, and a microphone 5. It is obvious that e.g. part of the keypad 3 can be placed also  
15 in another location in the housing 6 than in the front panel 6a. In some wireless communication devices, the sound volume of the earpiece 4 is arranged to be controlled e.g. with control buttons 9a, 9b which are placed for example in the side wall 6b, 6c of the housing. Also the operating switch 15 can be placed in the side wall 6b, 6c or the end 6d, 6e instead of the front panel 6a.  
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The housing 6 of the wireless communication device encloses substantially the whole of the electronic circuitry of the wireless communication device. It has an antenna 12, a transceiver 13 and  
25 processing means 14. The antenna 12 can be installed e.g. near the first end, the second end, or it may be completely enclosed within the housing.

30 The keypad 3 comprises first group 10 of keys or buttons or touch areas labelled 0—9 # and \* arranged in an array of four rows and three columns, as is usual, and a second group 11 of control keys or buttons for selecting various actions such as memory storage and recall, last number redial, call start etc., again as usual. The keys could be keys or buttons or any other kind of element for providing input to the  
35 processing means 14, preferably input from a user and preferably by means of contact with and/or pressure and/or touching of the key.

The labels of the keypad are oriented such that they are shown in a position and orientation natural to the user enabling them to read and interpreted in a manner conventional to the user, *i.e.* the labels are presented the right way up when the device is held in a use position.

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The first group 10 of keys is used in the normal function mode *e.g.* in selecting a telephone number. Said first group 10 of keys have, in addition to the normal function mode, preferably a text mode, wherein the first group 10 of keys can be used for writing text, *e.g.* short messages, in a way known as such.

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Furthermore, the second group 11 of control keys comprises advantageously a key for answering a call and a key for terminating a call. On the other hand, these so-called answer key and hang up key can be combined in one key which is used according to the functional mode in question either for answering a call, initiating a call in connection with selecting a telephone number, or terminating a call in a way known as such.

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For browsing or changing the settings of the wireless communication device 1, and for performing other additional functions, such as the functions of a telephone directory, the second group 11 of control keys of the wireless communication device 1 according to an advantageous embodiment of the invention, as shown in Fig. 3, is further provided with a menu key, browsing keys, an accept key, and a cancel key.

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The first group 10 of the keys is placed in the housing of the wireless communication device so that they are nearer the second edge 6e of the housing than the first end 6d of the housing. The second group 11 of the keys are placed so that they are mainly further from the second end 6e of the housing than the first group 10 of the keys. This kind of arrangement of the groups 10, 11 of keys makes the selection of a telephone number or the writing of text messages easier than in wireless communication devices of prior art.

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The display means 2 is placed in the housing of the wireless communication device so that the lower edge 2b of the display field is closer to the first end 6d of the housing than the upper edge 2a of the

display field. The display means 2 is oriented such that the characters and possible graphical figures to be displayed to the user are shown in a position and orientation natural to the user enabling them to be read and interpreted in a manner conventional to the user. Information  
 5 displayed on the display means 2 can be viewed through the front panel 6a, e.g. via a transparent window.

Furthermore, the wireless communication device 1 comprises a keypad cover part 7. This cover part is arranged to be preferably slidable between a first and a second limit position in the longitudinal direction of  
 10 the housing 6. In the first limit position, the cover part 7 is slid over the keypad 3, wherein at least part of the keypad, preferably the first group 10 of keys, is covered. Correspondingly, in the second limit position, which in this specification will also be called the use position, the slide part 7 is slid upwards and the keypad 3 is available for use (Figs. 3 and  
 15 4b). At other times, the cover part 7 can be slid over the keypad, as shown in Fig. 4a, wherein the cover part 7 also acts as a barrier preventing pressing of the keys (keylock) and protecting the keys of the keypad 3 under the cover part from mechanical damage. It is also  
 20 possible that the keylock includes means for electrical disablement of those keys that are not covered by the cover part 7.

In an advantageous embodiment of the invention the cover part 7 can be arranged so that it does not necessarily cover the whole keypad in  
 25 the first limit position as shown in Fig. 4a. Therefore the user can also perform some control operations with the wireless communication device when the cover part 7 is in the first limit position, e.g. by using the second group 11 of keys.

30 The wireless communication device 1 according to an advantageous embodiment of the invention is operated with one hand preferably in the following way. It is assumed that the wireless communication device 1 is in the standby position so that the cover part 7 is in the first limit position, i.e. positioned over the keypad 3. The user takes the wireless  
 35 communication device 1 either in his/her right or left hand so that the first end 6d of the housing of the wireless communication device is close to the user's wrist and the second end 6e is close to the fingers. Thus, the display field of the display means 2 close to the first end 6d of

the housing is in a position, in which the information displayed on the display field is visible to the user's view in a natural position. This situation is illustrated by the appended Fig. 4a. The user slides the cover part 7 from over the top of the keypad 3, wherein the situation corresponds to that shown in Fig. 4b. The location of the keys in the keypad 3, particularly the first group 10 of keys, is advantageous for the fingers, especially for the thumb. Thus, it is considerably easier to press the keys of the keypad 3 than in wireless communication devices of prior art, which also reduces the stress on the fingers. Moreover, the wireless communication device 1 can be placed closer to the wrist than wireless communication devices of prior art, wherein the grip by the hand on the wireless communication device is also firmer and more secure. The keys of the keypad 3 are pressed preferably by the thumb which is placed on the side of the front panel 6a when the wireless communication device 1 according to the preferred embodiment of the invention is held in the hand. Thus, the other fingers and the palm support the wireless communication device 1 in its place.

In the wireless communication device 1 according to the preferred embodiment of the invention, the earpiece 4 is placed advantageously in connection with the cover part. The microphone 5 is placed advantageously in the front panel 6a, preferably close to the first end 6d of the housing, e.g. between the display means 2 and the first end 6d of the housing. Thus, when the cover part 7 is slid into the use position, the distance between the earpiece 4 and the microphone 5 is advantageous in view of the distance between the ear and mouth of the user. The cover part 7 is also equipped with the necessary wirings (not shown) for conducting an audio signal to the earpiece 4 in a way known as such. In the earpiece 4, the electric audio signal is converted into an acoustic audio signal. It is obvious that the earpiece 4 can be also replaced by other known means, such as a small loudspeaker, for accomplishing the electroacoustic conversion.

The wireless communication device 1 can also be equipped with one or several means 8 for detecting the position of the cover part 7, such as a switch or the like. Thus, the position detecting means 8 generates a first signal, such as a voltage according to the logical 0 state (preferably ca. 0 V) when the cover part 7 is positioned over the keypad.

Correspondingly, the position detecting means 8 generates a second signal, such as a voltage according to the logical 1 state (preferably ca. a voltage corresponding to the operating voltage) when the cover part 7 is slid away from over the top of the keypad 3. This signal generated by the position detecting means 8 can be used, in addition to or in place of the answer key and hang up key, for answering and terminating a call. Thus, a call can be answered by sliding the cover part 7 away from over the top of the keypad 3, and the call can be terminated by sliding the cover part 7 back over the keypad 3.

It is obvious that the wireless communication device 1 according to the invention can differ from the above presented embodiment in practical applications. For example, the keypad 3 of the wireless communication device can be implemented partly or wholly by means of one or more touch-sensitive means instead of keys or buttons, or as a touch-sensitive screen 16 which may be combined with a display means such as a liquid crystal display (LCD). Thus, in the touch-sensitive screen, areas are defined for different key functions, wherein touching such an area e.g. with a finger performs a function corresponding to the pressing of a key. Fig. 5 illustrates a wireless communication device according to an advantageous embodiment of the invention comprising a combined touch-sensitive screen 16 and display means 2. The touch-sensitive screen 16 is divided into a part corresponding to a conventional keypad 3 and a part corresponding to a conventional display means 2, the relative location of the touch screen and the touch-sensitive regions of the keypad being defined according to the invention. The touch-sensitive means can also be located at least partly over the display means 2 wherein it is possible to display e.g. key-related information and/or other information on the display means 2.

The cover part 7 of the wireless communication device 1 according to the invention can also be implemented e.g. as a hinged, folding cover arrangement instead of a slide.

The present invention is not limited solely to the embodiments presented above but it can be modified within the scope of the appended claims.



Claims:

1. A wireless communication device (1) comprising at least:

- a display means (2) for presenting information, said display means having at least a first edge (2a) and a second edge (2b), wherein information is arranged to be displayed between said first (2a) and second edges (2b) of the display means, and said first edge (2a) is situated above displayed information and said second edge (2b) is situated below displayed information when information is displayed on said display means (2) in a position natural to a user of the wireless communication device,
- means (3) for performing key functions having at least means (10) for selecting a phone number,
- a housing (6) comprising at least a first end (6d), a second end (6e), and a front panel (6a) located between the first end (6d) and the second end (6e), and
- a cover part (7) arranged to be movable between a first limit position and a second limit position, in which first limit position said means (3) for performing key functions are at least partly covered by the cover part (7), and in which second limit position at least part of said means (3) for performing key functions are not covered by the cover part (7),

**characterized** in that said first edge (2a) of the display means is nearer the second end (6e) of the housing (6) than said second edge (2b) of the display means, and that said means (10) for selecting a phone number are placed in the housing of the wireless communication device so that they are nearer the second end (6e) of the housing than the first end (6d) of the housing.

2. The wireless communication device (1) according to claim 1, **characterized** in that said display means (2) is placed in the wireless communication device (1) in such a position that distance from said second edge (2b) of the display means to the second end (6e) of the housing (6) is substantially greater than distance from said second edge (2b) of the display means to the first end (6d) of the housing (6).

3. The wireless communication device (1) according to claim 1 or 2, **characterized** in that at least part of said display means (2) is closer

to the first end (6d) of the housing (6) than said means (3) for performing key functions.

5 4. The wireless communication device (1) according to claim 1, 2 or 3, said communication device (1) comprising an electroacoustic transducer (4), **characterized** in that the electroacoustic transducer (4) is placed in connection with said cover part (7).

10 5. The wireless communication device (1) according to claim 1, 2, 3 or 4, **characterized** in that it comprises an acoustoelectric transducer (5), which is placed close to said first end (6d) of the housing where said display means (2) is placed.

15 6. The wireless communication device (1) according to any of claims 1 to 5, **characterized** in that said cover part (7) is arranged to be slidable between the first limit position and the second limit position.

20 7. The wireless communication device (1) according to any of claims 1 to 6, **characterized** in that at least part of said display means (2) is closer to the first end (6d) of the housing (6) than said keys (10) for selecting a phone number.

25 8. The wireless communication device (1) according to any of claims 1 to 8, **characterized** in that said means (3) for performing key functions comprises a first group (10) of keys and a second group (11) of keys.

30 9. The wireless communication device (1) according to claim 8, **characterized** in that said second group (11) of keys is positioned between said means for selecting a phone number (10) and said display means (2).

35 10. The wireless communication device (1) according to claim 8 or 9, **characterized** in that said cover part (7) is arranged to cover said first group (10) of keys and at least one key of said second group (11) of keys remains uncovered in the first limit position of the cover part (7).

11. The wireless communication device (1) according to any of claims 1 to 10, **characterized** in that it comprises means (8) for detecting the position of the cover part (7).

5 12. The wireless communication device (1) according to claim 11, **characterized** in that it comprises means (14) for using the information regarding the position of the cover part in answering a call.

10 13. The wireless communication device (1) according to claim 11 or 12, **characterized** in that it comprises means (14) for using the information regarding the position of the cover part in terminating a call.

15 14. The wireless communication device (1) according to any of claims 1 to 13, **characterized** in that means (3) for performing key functions comprise a touch-sensitive screen (16).

20 15. The wireless communication device (1) according to the claim 14, **characterized** in that said touch-sensitive screen (16) is combined with said display means (2).

16. The wireless communication device (1) according to claim 14, **characterized** in that said touch-sensitive screen (16) and said display means (2) are at least partly overlapping.

(57) Abstract

The invention relates to a wireless communication device (1) comprising at least a display means (2) for presenting information which display means comprise at least a first edge (2a) and a second edge (2b), wherein information is arranged to be displayed between the first (2a) and second edges (2b) of the display means. The first edge (2a) is situated above displayed information and the second edge (2b) of the display means is situated below displayed information when information is displayed on the display means (2) in a position natural to a user of the wireless communication device. The wireless communication device (1) further comprises means (3) for performing key functions having at least means (10) for selecting a phone number; a housing (6) comprising at least a first end (6d) a second end (6e), and a front panel (6a) located between the first end (6d) and the second end (6e); and a cover part (7) arranged to be movable between a first limit position and a second limit position, in which first limit position the means (3) for performing key functions are at least partly covered by the cover part (7), and in which second limit position at least part of the means (3) for performing key functions are not covered by the cover part (7). The first edge (2a) of the display means is nearer the second end (6e) of the housing (6) than said second edge (2b) of the display means. The means (10) for selecting a phone number are placed in the housing of the wireless communication device so that they are nearer the second edge (6e) of the housing than the first end (6d) of the housing.

Fig. 3

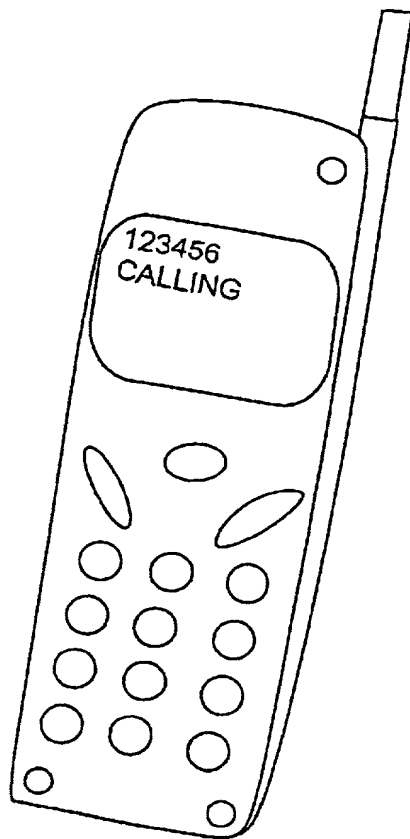


Fig 1 (prior art)

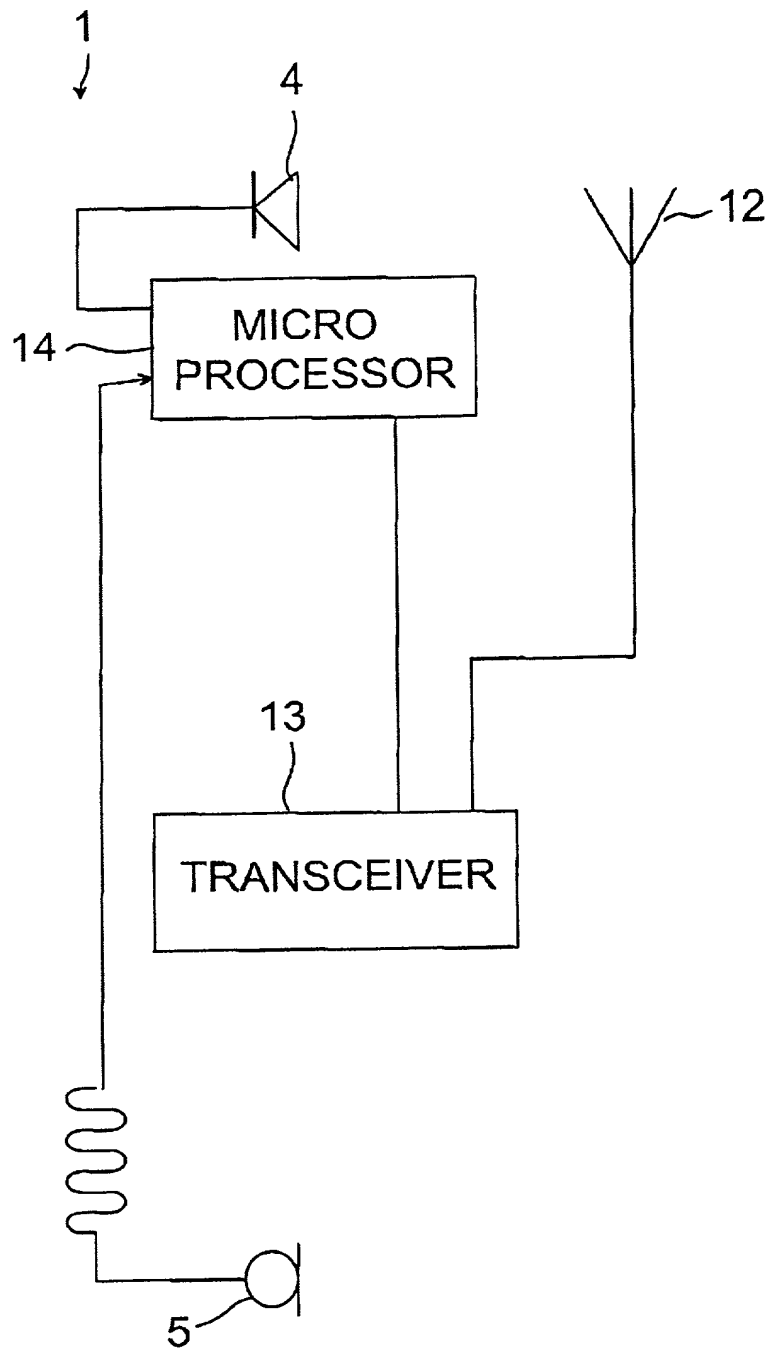


Fig 2

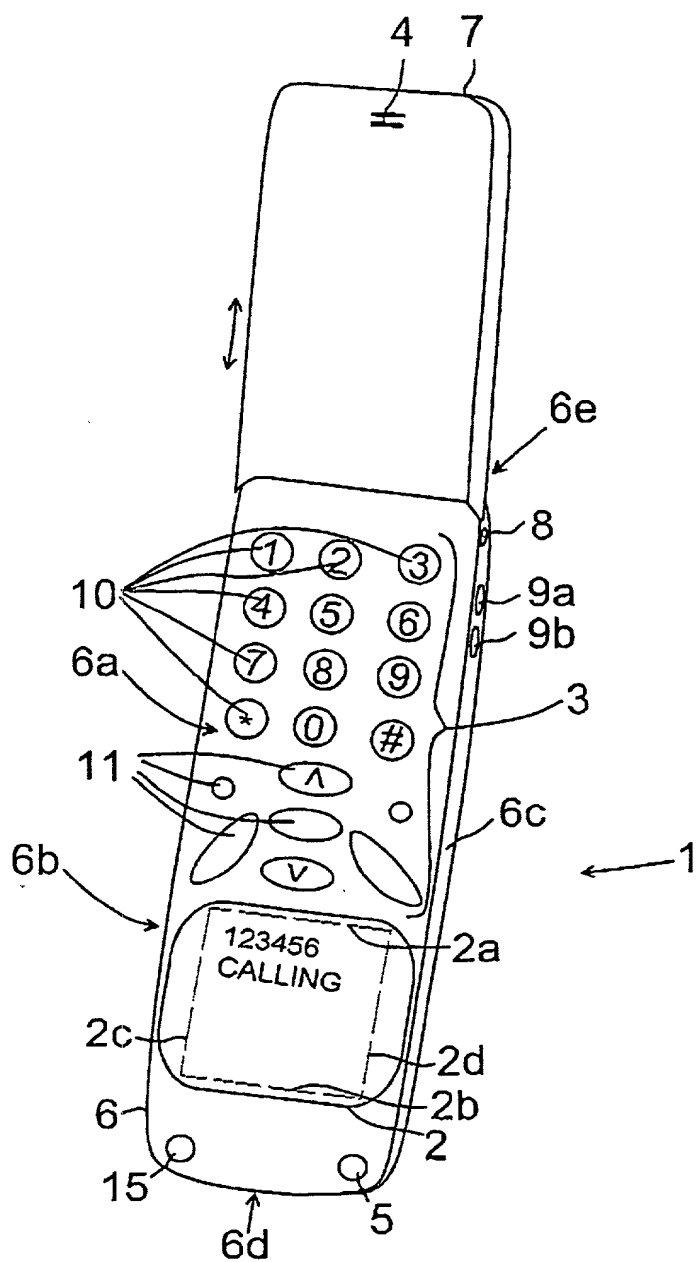


Fig 3

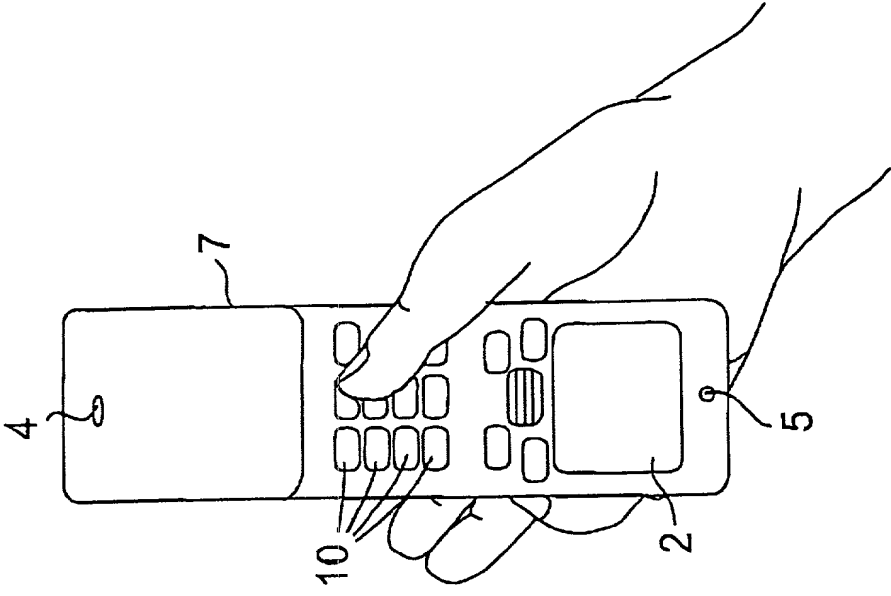


Fig 4b

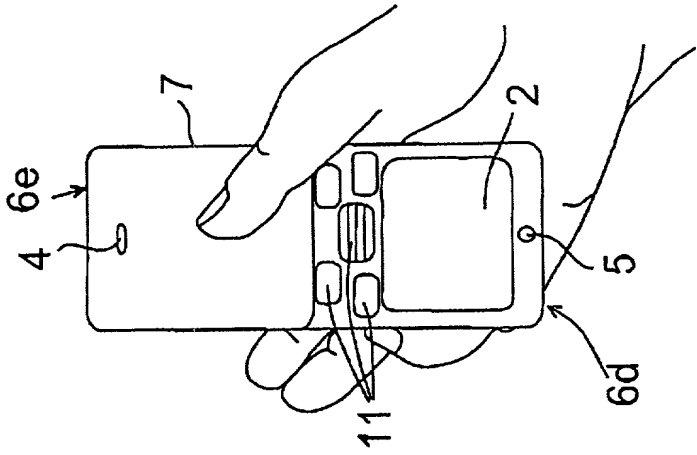


Fig 4a



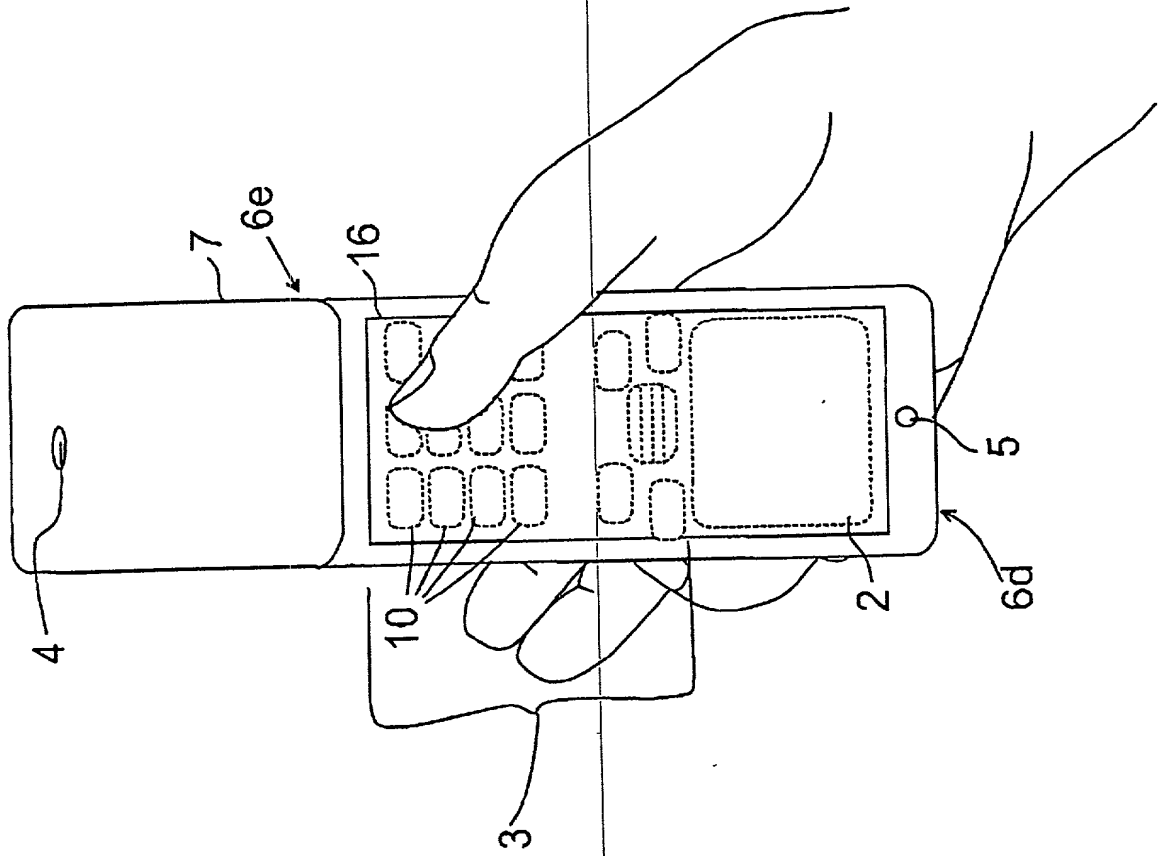


Fig 5